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09/942,220

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07/29/2004

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EXAMINER

NGUYEN, DANNY

ART UNIT

PAPER NUMBER

2836

DATE MAILED: 07/29/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/942,220

Applicant(s)

BERMAN ET AL.

Examiner

Danny Nguyen

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 February 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,3,5,7-12,14 and 17-22 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 11,12,14 and 17-22 is/are allowed.
- 6) ☒ Claim(s) 1,3,5,7-10 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Arguments

1. Applicant's arguments filed 02/18/2004 have been fully considered. The arguments directed to claim 1 was not persuasive, but for claim 11 was persuasive. Thus, claims 11, 12, 14, 17-22 are allowed.

In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., measuring a current from or in the solenoid to proportional to the applied lifting force) is not recited in the rejected claim 1. Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

Claim Objections

2. Claim 1 is objected to because of the following informalities: Claim 1, line 11, the phrase "an applied forced" should be "an applied force". Appropriate correction is required.

3. Claims 2, 4, 6, 13, 15, 16 are cancelled.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1, 3, 5, 7-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Collins et al (USPN 5,684,669) in view of Shang et al (USPN 2003/0079691), and Howald et al. (USPN 6,125,025)

Regarding claims 1 and 3, Collins et al. disclose a system comprises a chuck (122) equipped with a lifting mechanism (136) wherein the chuck is dimensioned to receive the wafer (118) and the lift mechanism that comprises at least one extendable lifting pin driven by a lift pneumatic mechanism (such as lifting pins 134, see col. 7, lines 29-30); a voltage source (102) operably coupled to the chuck and adapted to impart an electronic charge to the chuck and opposite electronic charge to the wafer, producing an electrostatic attraction between the wafer and the chuck (see col. 7, lines 23-33); a sensor that comprises a load cell adapted to measure a force due to the electrostatic attraction, wherein the force is in opposition to an applied force provided by the lifting mechanism (a force sensor attached to the lifting mechanism, see col. 8, lines 20-23) ; and control system (a computer control system 100 applies a reverse polarity chucking voltage to the wafer and the chuck, see col. 7, lines 21-32) adapted to neutralize the electrostatic attraction between the wafer and the chuck by reversing a polarity of the voltage source, thereby reducing the electronic charge to the chuck and the opposite electric charge to the wafer until the force due to the electrostatic attraction reaches a

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predetermined minimum as indicated by the sensor (col. 8, lines 14-54, also see the flow chart shown in fig. 2). Collins et al. do not disclose the lift mechanism is a solenoid and a current monitor for measuring a current. Shang et al disclose a lift mechanism would be used different lifting mechanism devices including a solenoid (see page 3, 0033) and Howald et al. disclose a current monitor (61) for measuring a current proportional to the applied force (col. 12 and 13, lines 57-5). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the system of Collins et al. to incorporate a solenoid lifting mechanism of Shang et al and a current monitor circuit as taught by Howald et al. in order to control relative motion between the lift base (Shang et al, 0033) and control the force applied during processing the workpiece (Howald et al., col. 1, lines 1-5).

Regarding claim 5, Collins et al disclose the control system (100) limits current (by decreasing chuck voltage) to the solenoid until the force opposing the lift mechanism reaches a predefined minimum and increase current to the solenoid to enable the lift mechanism to raise wafer off the chuck (see col. 8 and col. 9, lines 44-9).

Regarding claim 7, Collins et al. disclose the sensor comprises a pressure sensor (flow rate monitor within the gas supply device 131) adapted to measure equivalent to force opposing the lifting mechanism and to forward the measured pressure to the control system (100), (see col. 8, lines 14-39).

Regarding claim 8, Collins et al. disclose the control system further limits the pressure to the piston until the pressure opposing the extensible lifting pin reaches a

minimum, and then to increase the pressure to the piston to enable the lifting mechanism to raise the wafer off the chuck (see col. 8, lines 15-43).

Regarding claims 9, 10, Collins et al. disclose the sensor (the flow gas monitor within the gas supply device 131) comprises an orifice (130) at an interface between the wafer (118) and the chuck (122) operably coupled to the chuck are a line (an interface line between the computer control system and cooling gas supply) through which pressure may be applied to the wafer through the orifice; and a sensor (a gas flow monitor attached inside the computer control system, see col. 8, lines 25-27) adapted to indicate to the control system the presence or absence of pressure at the orifice.

Allowable Subject Matter

5. Claims 11, 12, 14, 17-22 are allowed.

Conclusion

6. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

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the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.


7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Danny Nguyen whose telephone number is (571)-272-2054. The examiner can normally be reached on Mon to Fri 8:00 AM to 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Brian Sircus can be reached on (571)-272-2058. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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7/22/2004


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